Timing in hip arthroscopy: does surgical timing change clinical results?

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Abstract

Purpose To our knowledge, there is no report in the orthopaedic literature that correlates the duration of hip pain with the results of hip arthroscopic surgery. The aim of this study was to compare the modified Harris Hip Score (mHHS) with patient satisfaction in a prospective study over a two year period.

Methods We present a prospective single-surgeon series of 525 consecutive patients undergoing hip arthroscopy for a labral tear, femoroacetabular impingement (FAI), or a chondral lesion. Modified HHS was recorded for all patients at the time of surgery and at six weeks, six months and one, two and three years after hip arthroscopy. At the time of surgery, patients were divided into three groups based on duration of preoperative symptoms: group A, under 6 months; group B, six months to three years; group C, over three years.

Results Mean age was 39 years. There were significantly better outcomes for patients who underwent surgery within six months of symptom onset compared with those who waited longer. Patients who had symptoms for over 3 years by the time of surgery had a significantly poorer result than those with a shorter symptom duration and a higher chance of requiring revision surgery.

Conclusions We recommend that patients with a diagnosis of labral tear, FAI or a chondral lesion should undergo hip arthroscopic surgery within six months of symptom onset. Patients with persistent symptoms for over three years should be made aware of the poorer outcome after hip arthroscopy.

Introduction

Hip arthroscopic surgery has evolved greatly in recent years to become a common operation for labral tears, femoroacetabular

impingement (FAI) and chondral lesions [1]. Despite this, to our knowledge, the best timing for hip arthroscopy has not yet been defined in the orthopaedic literature. As in the case of knee pathology [2], it appears that a general consensus has been reached by most surgeons that surgery should be deferred until the acute symptoms have resolved and conservative treatment has failed. Our aim was to correlate the results of hip arthroscopic surgery with the duration of a patient's preoperative symptoms.

Methods

We studied 561 consecutive patients who underwent a hip arthroscopy by the senior author (***) in a single-surgeon practice. Criterion for inclusion was at least one of the following preoperative diagnoses: labral tear (reported on magnetic resonance arthrography), cam FAI (alpha angle > 50° [3]), pincer FAI (positive crossover sign [3]) and chondral lesion. Criterion of exclusion was radiographically established signs of arthritis (Tonnis grade III or IV [4]). Patients were prospectively assessed before surgery and at six weeks, six months and one, two and three years after the procedure. Patients with incomplete follow-ups were excluded. Patient age at surgery, gender, duration of hip symptoms, diagnoses and intraoperative findings were prospectively recorded in a custom-designed database. For an outcome measure, we used the modified Harris Hip Score [5] (mHHS) divided into pain and function assessments. Mean scores were rounded up or down to the nearest whole number. Patients were divided into three groups according to the duration of hip pain: group A, under six months; group B, six months to three years; group C, over three years.

Hip arthroscopies were performed in the lateral position using a specialist traction table (Lateral Hip Positioning System, Smith and Nephew Inc, Andover, MA, USA.) and under general anaesthesia. Three portals (anterolateral, posterior paratrochanteric and superior) were commonly used, with

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further portals being added if required. The senior author's surgical technique has already been described [6]. The following pathologies were identified and treated at surgery: labral tears (bucket-handle or peripheral), chondral lesions (Outerbridge [7] classification greater than grade II) and impingement lesions. Peripheral labral tears were treated by partial labrectomy; isolated bucket-handle labral lesions were sutured with anchors; chondral lesions were treated with microfracture; cam-type impingement lesions were excised with arthroscopic burr; pincer-type impingement lesions were treated by partial detachment of the labrum, acetabuloplasty and labrum suture with anchors. Revision procedures or subsequent arthroplasties were recorded.

Statistical analysis

All patient data were recorded in a custom-designed database and analysed by a commercial software package (TexaSoft, WINKS SDA Software, 6th Edition, Cedar Hill, TX, 2007). Normal data distribution was checked by the test for equality of variance. Age at surgery and pre- and postoperative mHHS for the three groups were compared using the Kruskal–Wallis test. Gender, side and subsequent operations were compared using Pearson's chi-square test. Statistical significance was fixed at $p < 0.05$.

Results

Patient population and intraoperative findings

Of the 561 patients, 36 were excluded because of deficient follow-up results. For the remaining 525 patients, mean age

Table 1 Population groups

Group	A	B	C
Number of patients	73	292	160
Percentage	14	56	30
Age at surgery (years)	38	39	38
Range (years)	17–55	18–52	18–58
Median (years)	38	38	38
Male	45	135	61
Female	28	157	99
Right	38	172	85
Left	35	120	74
Mean pain duration (days)	136	490	3,818
Labral tear	57	194	98
FAI	22	65	43
Chondral lesion	6	63	26

FAI femoroacetabular impingement

Table 2 Comparison of group statistical analysis

	P values		
	Group A vs group B	Group A vs group C	Group B vs group C
Age at surgery	0.717	0.395	0.424
Gender	0.382	0.427	0.097
Side	0.554	0.868	0.754
Preoperative mHHS	0.844	0.652	0.056
Postoperative mHHS at 6 weeks	0.009	0.001	0.049
Postoperative mHHS at 6 months	0.006	0.0008	0.0005
Postoperative mHHS at 1 year	0.001	0.0001	0.0001
Postoperative mHHS at 2 years	0.044	0.001	0.001
Postoperative mHHS at 3 years	0.041	0.001	0.001

mHHS Modified Harris Hip Score

at index surgery, side, gender distribution and intraoperative findings are shown in Table 1. No significant differences were found between the three groups (all p values > 0.05) for age, gender and side (Table 2).

Results

Mean preoperative mHHS was 59, 58 and 55 for groups A, B and C, respectively. There was no significant difference between these preoperative scores (Table 2). Mean postoperative mHHS were, respectively, 68, 64 and 62 at six weeks; 75, 71 and 67 at six months; 78, 73 and 69 at 1 year; 78, 76 and 70 at 2 years; 79, 75 and 69 at three years (Table 2). For each group, there was significant improvement in mHHS between pre- and postoperative values at all time periods: $p = 0.023$, 0.004 and 0.0083 for group A at six weeks and six months, respectively; and at one, two and three years, $p = 0.043$, 0.0098 and 0.021, respectively, for group B;

Fig. 1 Revision rate for each group

and $p=0.038$, 0.014 and 0.029, respectively, for group C. The requirement for subsequent revision hip arthroscopy or arthroplasty on the same side was 4 % in group A, 11 % in group B and 13 % in group C (Fig. 1).

Discussion

The main causes of hip pain in young patients are labral tear, FAI or chondral lesion [8]. Although these pathologies can appear as single entities, they are often combined. For their management, open or arthroscopic labrum repair, impinging bone excision or microfracture have been advocated [6]. There is a trend towards less invasive procedures, with high rates of success when these pathologies are treated arthroscopically [9–11]. The best timing for arthroscopic knee surgery reported for anterior cruciate ligament lesions is within the first year of injury [12], but there is no study describing the best timing for hip arthroscopy. Some authors suggest hip pain should be treated conservatively and recommend surgery only if physiotherapy has failed [13]. Instinctively to a medical practitioner, this might appear a sensible thing to do. However, our results show that this approach is best limited to a period under six months from symptom onset. We demonstrate better clinical outcome when labral tears, impingement lesions or chondral surface damage are treated arthroscopically within six months of symptom onset. This finding may perhaps be related to the knowledge that chondral injury can progress, as this is commonly described as cause of surgical failure [14]. Our results certainly emphasise the importance of early and accurate diagnosis of intra-articular hip pathology.

Once labral tear, FAI or chondral damage is suspected or diagnosed, typical conservative treatment might include limited weight bearing, avoidance of sport, nonsteroidal anti-inflammatory drugs or physiotherapy. The patient's symptoms may be reduced during this period of limited activity. However, they may recur on return to normal activities, perhaps because of the limited ability of a labral tear or chondral surface to heal [15]. Hickman and Peters' [16] conclusion that "physical therapy has not proved to be of significant benefit and is not recommended" for patients with a labral tear, is interesting. Perhaps it was a failure of physical therapy or perhaps it was simply the delay to surgery created by prolonged physical therapy that led to their conclusion.

Our study has a number of limitations: It was undertaken in a single unit that has performed hip arthroscopic surgery to a high level for many years. However, a

single, experienced, hip arthroscopic surgeon, using an identical technique and identical rehabilitation protocol, undertook all surgery. This might limit reproducibility of these results [17]. We also lost 36 of our original 561 patients to follow-up.

Conclusions

An early diagnosis of labral tear, FAI or chondral damage for symptomatic patients is to be encouraged. Conservative treatment is, of course, encouraged; however, it should be limited to a period of no more than six months from symptom onset. At that point, hip arthroscopy should be performed if it is to be performed at all. To wait longer may reduce the chances of achieving good postoperative results, and patients should be counselled accordingly.

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